

First Named Inventor: Thomas Edward Priebe

Application No.: 10/616,786

REMARKS

Pending in the present application are claims 6-27 of which claims 6, 18, and 26 are independent. In the Office Action, claims 6-18 and 20-27 were rejected under 35 U.S.C. § 103(a) as unpatentable over either Koo (U.S. Pat. No. 5,829,278) or Japanese Patent Number 2001-12882A ("Japan '882")¹ in view of Vuncannon (U.S. Pat. No. 4,717,870). Also in the Office Action, claim 19 was rejected under section 103(a) as unpatentable over Koo or Japan '882 in view of Vuncannon and in further view of Chen (U.S. Pat. No. 6,668,843). In reliance on the following remarks, the present application containing claims 6-27 is in condition for allowance, and reconsideration and notice to that effect is respectfully requested.

35 U.S.C. § 103(a) Claim Rejections

"In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." M.P.E.P. § 2141.01(a) (quoting *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992)). Koo and Japan '882 disclose an apparatus for hot moistening face or hand-towels. The towels disclosed in Koo and Japan '882 are used by restaurants and barbershop patrons. Vuncannon discloses an apparatus for monitoring the moisture level of warps of yarn in the textile industry. In particular, Vuncannon describes controlling the moisture content of yarn during dyeing operations and sizing the yarn with, e.g., starch, gelatin, oil, or wax to protect the yarn from abrasive weaving processes (see, e.g., col. 1, lines 13-17 and lines 18-30). None of Koo, Japan '882, or Vuncannon are in Applicant's field of endeavor, and persons having ordinary skill in the art of Applicant's invention would not look outside their field of endeavor to moistening face towels or controlling the level of starch, gelatin, oil, or wax applied to warps of yarn to solve the particular problem with which Applicant's invention is concerned.

¹ An English translation of Japan '882 provided by the Japanese Patent Office web site is enclosed with this Response.

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Furthermore, even in the event any of Koo, Japan '882, or Vuncannon could properly be relied upon individually, the references are not in analogous fields of endeavor with respect to each other. Koo and Japan 882 are directed to hot moistening towels used by restaurants and barbershops, while Vuncannon is directed to controlling the application of dyes and sizing materials, e.g. starch, gelatin, oil, wax, etc., to warps of yarn. Even assuming a person having ordinary skill in the art of Applicant's invention would look outside their field of endeavor to the teachings of Koo or Japan '882, that person would not then look further to Vuncannon for additional guidance. The only way the teachings of Koo or Japan '882 in combination with Vuncannon could be relevant would be to use Applicant's own disclosure as a road map to piece together the disparate references in non-analogous fields of endeavor. However, "[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992).

The Office Action asserts that apparatus claims must be distinguished from the prior art in terms of structure rather than function or intended use and therefore recitations relating Applicant's invention to cleanrooms or "cleanroom material" do not distinguish Applicant's invention over the cited references. However, the question of distinguishing over the prior art is only relevant after it is determined the references form a part of the prior art for Applicant's invention. See M.P.E.P. § 2141.01(a) ("The examiner must determine what is "analogous prior art" for the purpose of analyzing the obviousness of the subject matter at issue"). As outlined above, the distinctions between or obviousness of claims 6, 18, and 26 over Koo, Japan '882, and Vuncannon is not reached in this case, because the references may not be properly relied upon as a basis for rejection under 35 U.S.C. § 103(a).

Koo, Japan '882, and Vuncannon do not form a proper basis for rejecting amended claims 6, 18 and 26 under 35 U.S.C. § 103(a), because the references are not in Applicant's field of endeavor and are not reasonably pertinent to the particular problem with which Applicant's invention is concerned. Furthermore, Applicant's disclosure cannot be used as hindsight to piece together the isolated disclosures found in the two different non-analogous fields of endeavor of Koo/Japan '882 and Vuncannon. Claims 7-17 depend from claim 1 and are allowable therewith. Claims 19-25

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depend from claim 18 and are allowable therewith. Claim 27 depends from claim 26 and is allowable therewith.

Even in the event any of Koo, Japan '882, or Vuncannon could be relied on as a basis for rejecting claims 6, 18, and 26, which is not being conceded, at least independent claim 26 is not obvious over Koo/Japan '882 in view Vuncannon. Vuncannon does not disclose, teach, or suggest "a user interface for providing a user input signal" or "a feedback system for providing a feedback signal which is a function of the saturation level of the cleanroom material" as required by claim 26. The Office Action asserts that Vuncannon discloses an arrangement including "a control system controlling the amount of ... liquid applied to the textile material based on a parameter related to the target saturation level, **based upon a user input of the textile material.**" However, "a user input of the textile material" does not describe "a user interface for providing a user input signal." Furthermore, the Office Action does not identify the location in Vuncannon for any teaching regarding user inputs. In fact, Vuncannon contains no mention whatsoever of user inputs, let alone user interfaces for providing user input signals. The Office Action simply omits the limitation of a feedback system, which element of claim 26 is also not disclosed by Vuncannon (or for that matter Koo or Japan '882).

CONCLUSION

The above remarks traverse the rejection of independent claims 6, 18 and 26 under 35 U.S.C. § 103(a) based on Koo or Japan '882 in view of Vuncannon. In addition, the combinations of features recited in claims 7-17, 19-25 and 27 are independently patentable, although this does not need to be specifically addressed herein since any claim depending from a patentable independent claim is also patentable. *See* M.P.E.P. § 2143.03 (citing *In re Fine*, 5 U.S.P.Q.2d (BNA) 1596 (Fed. Cir. 1988)). Therefore, all pending claims 6-27 are now in condition for allowance and notice to that effect is requested.

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Respectfully submitted,

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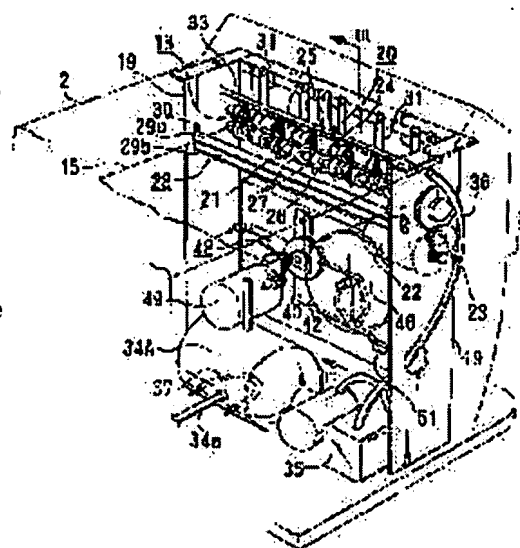
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(54) WET TOWEL MANUFACTURING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To manufacture a wet towel of a prescribed length by wetting towel cloth in a dry state.

SOLUTION: This device is provided with a case 2, a towel delivery means 18 for pulling out the towel cloth 15 wound in a roll state and formed inside the case 2 and sending it out to the outside of the case 2, a water storage tank 34 for storing water for wetting the towel cloth 15, a pump 35 for pressurizing the water of the water storage tank 34, a jetting nozzle 33 for jetting the water pressurized by the pump 35 to the towel cloth 15 in the middle of sending out the towel cloth 15 to the outside of the case 2 and a cutter 38 for cutting the towel cloth 15 wetted by the water jetted from the jetting nozzle 33 into a decided length.



LEGAL STATUS

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION
TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] a case and the towel which wound around the roll condition and was prepared in the case -- with a towel delivery means to pull out the ground and to send it out out of a case It is alike and sets. a towel -- the water tank in which the water for making the ground become wet is stored, the pump which pressurizes the water of a water tank, and a towel -- the ground is sent out out of a case -- on the way -- the water pressurized with the pump -- a towel -- the towel wet with the water injected from the injection nozzle injected to the ground, and the injection nozzle -- it is characterized by having the cutter which cuts the ground to the regular die length -- getting wet -- a towel manufacturing installation.

[Claim 2] while a towel delivery means is rotated through the drive motor installed in the case, the gear group which slows down and transmits the rotational speed of the drive motor, and its gear group -- a towel -- the driving roller which applies the delivery force to the ground, a driving roller, and a towel -- the ground -- inserting -- confronting each other -- a towel -- it comes to have the auxiliary roller which transmits the turning effort of a driving roller to the ground certainly -- being according to claim 1 -- getting wet -- a towel manufacturing installation.

[Claim 3] the towel which was damp in the outlet side of either a driving roller or an auxiliary roller and both -- the shell for not making the ground adhere to a roller is prepared -- being according to claim 1 or 2 -- getting wet -- a towel manufacturing installation.

[Claim 4] A publication gets wet in either of claims 1-3 which has prepared much irregularity for not making the wet towel sent out from a delivery roller adhere in the front face of the front panel of the discharge outlet side which passed the driving roller and the auxiliary roller, and it is a towel manufacturing installation.

[Claim 5] a towel -- the ground is paper towels -- being according to claim 1 to 4 -- getting wet -- a towel manufacturing installation.

[Claim 6] a towel -- either the disinfection agent or the germicide is mixed in the water which wets the ground -- being according to claim 1 to 5 -- getting wet -- a towel manufacturing installation.

[Claim 7] While a water tank is divided into a big water tank and a small water tank, a publication gets wet in either of claims 1-6 in which the small water tank contains the heating heater, and it is a towel manufacturing installation.

[Claim 8] an injection nozzle -- a roll-like towel -- between the ground and towel delivery means -- one pair of ranging behavior rollers -- having -- a towel -- the towel which faced across the ground -- the ground -- a grasping means -- preparing -- the towel -- the ground -- it comes to prepare an injection nozzle between a grasping means and a towel delivery means -- being according to claim 1 to 7 -- getting wet -- a towel manufacturing installation.

[Claim 9] The stationary knife by which the cutter was fixed to the front section within a case, and the migration cutting edge which fixed to the slide plate by which ** arrival was carried out so that cutting parts might counter the stationary knife and vertical migration might be possible for the front section within a case, It is installed so that it can rotate in a case, and a publication gets wet in either of claims 1-8 which consists of a disk cam which moves a slide plate perpendicularly in rotation, and a drive motor which carries out the rotation drive of the disk cam, and it is a towel manufacturing installation.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] just before this invention gets wet and a user uses especially about the manufacturing installation of a towel -- a towel -- the ground is wet and it considers as the condition that it is suitable for use as it is -- it gets wet and is related with the manufacturing installation of a towel.

[0002]

[Description of the Prior Art] The thing which got wet, soaked the towel etc. in water and extracted it firmly as a towel and which is called a steamed towel is common. Moreover, what heated the wet towel with steam as business use is called a hot towel, and is used in the barbershop etc. Furthermore, as business use, after a vendor soaks the towel made of cloth in a damp or wet condition, he does a seal package with a PURASUTCHIKU film, and some which are supplied to a need person have him.

[0003] In a lot of eating-and-drinking business which gets wet and has the demand of a towel, many things which the paper which can be thrown away was damp, wet the towel with water, and carried out the seal package with the PURASUTCHIKU film are also used.

[0004] On the other hand, it throws away also using the wet paper for makeup, and it gets wet and is used for eradication of the hand in the outdoors etc. for the same purpose as a towel.

[0005]

[Problem(s) to be Solved by the Invention] In the case of a meal although a hand should be washed and it is clean, it is difficult to wash one's hand with water in a dining-room in the large dining-room which offers meal of a lot of people at once, for example, works and the dining-room in a firm, and the dining-room in a school. Then, although it is desirable to take out a steamed towel separately before a meal, it is not easy to prepare a steamed towel so much.

[0006] For example, the steamed towel generally taken out from a dining-room has added water, in order to make it easy to wipe after sterilizing and disinfecting the towel made with cloth, after use, it repeats sterilization, disinfection, and a humid activity, and a reuse is carried out.

[0007] Since playback of this steamed towel is usually repeatedly performed by the vendor, it is hard to say that it is not necessarily kept clean, and whenever [exhausting] is intense and there are problems, like costs increase.

[0008] even if works, a firm, a school, etc. take a help and time and effort and it requests a vendor in them in order a huge amount is needed and to prepare the steamed towel made of cloth if all users use a steamed towel for every meal, ***** in ** are required. Moreover, as a disposable paper towel, the costs are not cheap.

[0009] Furthermore, in some which considered the steamed towel and the paper towel as the seal package with the PURASUTCHIKU film, there is also a possibility that the PURASUTCHIKU film after use may cause environmental destruction.

[0010] It was made in order to solve the above problems, it gets wet for throwing away, and this invention has equipment of simple structure, manufactures a towel simply and promptly, and aims at enabling it to provide cheaply.

[0011]

[Means for Solving the Problem] According to this invention, the above-mentioned technical problem is solved as follows.

(1) case the towel which wound around the roll condition and was prepared in the case -- with a towel delivery means to pull out the ground and to send it out out of a case It is alike and sets. a towel -- the water tank in which the water for making the ground become wet is stored, the pump which pressurizes the water of a water tank, and a towel -- the ground is sent out out of a case -- on the way -- the water pressurized with the pump -- a towel -- the towel wet with the water injected from the injection nozzle injected to the ground, and the injection nozzle -- the cutter which cuts the ground to the regular die length is prepared.

[0012] (2) while a towel delivery means is rotated in the above-mentioned (1) term through the drive motor installed in the case, the gear group which slows down and transmits the rotational speed of the drive motor, and its gear group -- a

towel -- the driving roller which applies the delivery force to the ground, a driving roller, and a towel -- the ground -- inserting -- confronting each other -- a towel -- it has the auxiliary roller which transmits the turning effort of a driving roller to the ground certainly.

[0013] (3) the towel which was damp in the outlet side of either a driving roller or an auxiliary roller and both in the above (1) or (2) terms -- the shell for not making the ground adhere to a roller is prepared.

[0014] (4) Prepare much irregularity for not making the wet towel sent out from a delivery roller adhere in either of the above-mentioned (1) - (3) terms in the front face of the front panel of the discharge outlet side which passed the driving roller and the auxiliary roller.

[0015] (5) either of the above-mentioned (1) - (4) terms -- setting -- a towel -- the ground is paper towels.

[0016] (6) either of the above-mentioned (1) - (5) terms -- setting -- a towel -- either the disinfection agent or the germicide is mixed in the water which wets the ground.

[0017] (7) In either of the above-mentioned (1) - (6) terms, while a water tank is divided into a big water tank and a small water tank, the small water tank contains the heating heater.

[0018] (8) either of the above-mentioned (1) - (7) terms -- setting -- an injection nozzle -- a roll-like towel -- between the ground and towel delivery means -- one pair of ranging behavior rollers -- having -- a towel -- the towel which faced across the ground -- the ground -- a grasping means -- preparing -- the towel -- the ground -- prepare an injection nozzle between a grasping means and a towel delivery means.

[0019] (9) The stationary knife by which the cutter was fixed to the front section within a case in either of the above-mentioned (1) - (8) terms, The migration cutting edge which fixed to the slide plate by which ** arrival was carried out so that cutting parts might counter the stationary knife and vertical migration might be possible for the front section within a case, It is installed so that it can rotate in a case, and it consists of a disk cam which moves a slide plate perpendicularly in rotation, and a drive motor which carries out the rotation drive of the disk cam.

[0020]

[Embodiment of the Invention] Drawing 1 - drawing 9 show 1 operation gestalt of this invention. In addition, the right end of drawing 1 is a front face.

[0021] It is the perspective view concerning this invention which got wet and looked at the towel manufacturing installation from the method of the forward right, and drawing 1 gets wet, and it circles to the circumference of the vertical axes (illustration abbreviation) prepared in the left, and it has established the front panel (3) which can be opened and closed in the front face of the case (2) in a towel manufacturing installation (1) which carries out front opening. It gets wet in the front face of the front panel (3), and the saucer (6) on which structure length gets wet in the lower part, and the exhaust port (5) of a towel (4) puts a towel (4) into it is prepared in it.

[0022] The lock release button (7) of which the **** is canceled is prepared in the left lateral of the front panel (3), and the control panel (8) for getting wet and operating a towel manufacturing installation (1) is prepared in the top face of the front panel (3).

[0023] The start button (9) which it gets [start button] wet and makes manufacture of a towel (4) start, and two or more actuation switches (11) for getting wet and performing the manufacture number of sheets of a towel (4), the digital-readout machine (10) for getting wet and setting up the die length of a towel (4), and a setup of die length are formed in the control panel (8).

[0024] Many protruding lines (13) of the vertical direction for preventing that just made [which it lets out to the perpendicular wall surface (12) in the front panel (3) which gets wet and can set the exhaust port (5) of a towel (4) caudad from an exhaust port (5)] gets wet, and a towel (4) sticks are prepared, and the concave convex (14) on a par with a longitudinal direction is formed.

[0025] the towel of the shape of a roll which gets wet behind the front panel (3) in the inside of a case (2), and serves as an ingredient of a towel (4) behind -- the ground (15) is established as shown in drawing 8 , drawing 9 , or drawing 10 .

[0026] the towel which will be used for this invention if it explains to a detail based on drawing 8 and drawing 9 -- it is thick a little and the ground (15) is wound in the shape of a roll in the condition which porous water nature consisted of high paper, and dried of usually being called the paper towel.

[0027] a roll-like towel -- the ground (15) is wound around a mandril (16), and is supported, and the mandril (16) is supported by the right-and-left wall surface of a case (2) pivotable at the piece of support (17) by which the turning-inward protrusion was carried out.

[0028] a towel -- the tip of the ground (15) is pulled out to the front and introduced into the towel delivery means (18) in the front panel (3) which got wet and was established behind the exhaust port (5) of a towel (4).

[0029] Drawing 2 is the perspective view showing the rear face of the front panel (3).

[0030] As shown in drawing 2 , the towel delivery means (18) equips the perpendicular fulcrum (19) of the right and left prepared in the front end section inside of a case (2), and (19) with the top tread roller (20) with which both ends were supported pivotably, and the lower roller (21).

[0031] It sets caudad, and a lower roller (21) is connected with the drive motor (22) attached in the right-hand side perpendicular fulcrum (19) through the interlocking gear group for moderation (23), and serves as a driving roller.

[0032] A top tread roller (20) fixes two or more rubber rollers (25) of the diameter of said to the pivot (24) supported pivotably by the perpendicular fulcrum (19) of said right and left, and (19), and is formed in it.

[0033] A lower roller (21) fixes the rubber roller (27) which is a upside rubber roller (25) and a upside equal diameter, and was divided into the pivot (26) supported pivotably by the perpendicular fulcrum (19) of said right and left, and (19) more finely than it, and is formed.

[0034] An up-and-down rubber roller (25) and (27) have moderate elastic force, and the pressure welding is mutually carried out.

[0035] between the rubber roller (25) of these upper and lower sides, and (27) -- the towel of the shape of said roll -- the point of the ground (15) should be caught -- the point is inserted in the discharge hole (5) prepared in the front panel (3).

[0036] It is desirable to consist one of an up-and-down rubber roller (25) and (27) of an elastic ingredient from another side. since the lower roller (21) is a driving roller in this example -- that rubber roller (27) -- a upside rubber roller (25) -- as elasticity -- a towel -- it is made to have increased the touch area with the ground (15)

[0037] a upside rubber roller (25) -- a lower rubber roller (27) -- a towel -- the towel inserted into both rubber rollers (25) and (27) since it was rotated by a pivot (24) and one, although it was the follower roller which forces the ground (15) -- to the ground (15), it will work also as a driving roller.

[0038] Behind the towel delivery means (18) which consists of a top tread roller (20) and a lower roller (21) the towel pulled out from the roll, while guiding the ground (15) between a top tread roller (20) and a lower roller (21) a towel -- it does not slacken between divisions with the ground (15) -- as -- a towel -- while applying a back tension to the delivery force of the ground (15) -- a towel -- the towel which grasps the ground (15) -- the ground -- the grasping means (28) is established.

[0039] a towel -- the ground -- a grasping means (28) consists of a free rotation roller (29a) (29b) of one pair of upper and lower sides supported pivotably for both ends between a perpendicular fulcrum (19) on either side and (19), enabling free rotation, and the migration of an upper roller (29a) in the vertical direction is attained through the longwise bearing hole (30) prepared both the perpendicular fulcrum (19) and (19).

[0040] a towel -- the ground (15) passes through between both free rotation rollers (29a) (29b), and is led to between the top tread rollers (20) and lower rollers (21) of a towel delivery means (18). namely, a towel -- the ground (15) -- a towel -- the ground -- it is built between a grasping means (28) and a towel delivery means (18).

[0041] both the free rotation roller (29) and (30) -- the thing of the metal shape of a long and slender rod -- it is -- the self-weight of an upper roller (29) -- a towel -- it has faced across the ground (15).

[0042] the towel which has sandwiched these free rotation roller (29a) (29b) according to the inertia operation by the weight -- the depressant action which presses down a rapid rate change of the ground (15) occurs.

[0043] the towel which comes out of an up-and-down roller (20) and (21) ahead [of a towel delivery means (18)] as shown in drawing 4 -- the ground (15) adheres to the rubber roller (25) of a top tread roller (20), and many shells (31) for preventing having been wound are prepared.

[0044] A shell (31) consists of a long and slender elastic piece of-like [strip-of-paper], and have consistency into the part of the gap of the adjoining thing in the rubber roller (25) of the upper part divided into plurality, and it is arranged. The lower limit of each shell (31) was inserted between adjoining rubber rollers (25), and the upper limit has fixed to the upper limit of the anterior part frame (32) which connects the front end of a perpendicular fulcrum (19) on either side and (19).

[0045] a towel -- the ground -- the towel over which it was built between the grasping means (28) and the towel delivery means (18) -- the injection nozzle (33) of the shape of a pipe with a longitudinal direction almost long and slender above the center of the longitudinal direction of the ground (15) is built over and prepared in a perpendicular fulcrum (19) and (19). The output hose (36) of the pump (35) which pressurizes the water of the water tank (34) which established the right end of an injection nozzle (33) in the posterior part of a case (2) is connected (refer to drawing 2).

[0046] Between the water tank (34) and the pump (35), the water supplied through a hose (34a) from a water tank (34) is divided a little, and is once stored, and is warmed, and the auxiliary tank (34A) having the heater (37) for sending to a pump (35) is prepared.

[0047] the towel which it let out to the anterior part frame (32) from the discharge hole (5) with the towel delivery means (18) between the towel delivery means (18) and the discharge hole (5) as shown in drawing 3 and drawing 4 -- the cutter (38) which cuts the ground (15) by the regular die length is prepared.

[0048] The stationary knife which the cutter (38) fixed on the anterior part frame (32) [above a discharge hole (5)] (39), The slide plate which enabled it to move up and down along with the guide plate (40) prepared near the center of an anterior part frame (32), and (41) (42), The migration cutting edge long to a longitudinal direction which fixed to the upper limit of a slide plate (42) (43), Per [which protruded on the lower limit section near the upper limit of a slide

plate (42) towards back, respectively] one pair of cams (42a) (42b) The disk cam pivoted by the backward pivot (45) which was made to contact a cam (44), connected with the slide plate (42), and fixed on the anterior part frame (32) (46), The drive motor which drives a disk cam (46) through the reduction gear group (48) coordinated with the gear (47) prepared in the peripheral surface of a disk cam (46) (49), the cutting number of sheets to which the actuator (50) protrudes on the migration locus of the cam (44) of a disk cam (46) -- counting -- it has the switch (51). [0049] In addition, the longwise hole (42c) which may **** a pivot (45) is prepared in the center section of the slide plate (42).

[0050] Drawing 7 is the perspective view which looked at the above-mentioned disk cam (46) from the transverse plane. A cam (44) When cutting the ground (15), per upper cam (42a) is contacted. a migration cutting edge (43) is gone up -- making -- a towel -- After cutting the ground (15), per downward cam (42b) is contacted. smooth -- and -- prompt -- a migration cutting edge (43) -- a stationary knife (39) -- **** doubling and a towel -- the following towel -- it has the main cam side (44a) which misses a migration cutting edge (43) promptly to delivery at the tip of the ground (15), and the sub cam side (44b) supported auxiliary when the main cam side (44a) changes per cam of one pair of upper and lower sides (42a) (42b).

[0051] Drawing 3 and drawing 4 show the condition that the migration cutting edge (43) was maximum-dropped, by the disk cam (46), and drawing 5 and drawing 6 show the condition that the migration cutting edge (43) was maximum-raised, by the disk cam (46).

[0052] cutting number of sheets -- counting -- a switch (51), when a disk cam (46) maximum-drops a migration cutting edge (43), as shown in drawing 3 and drawing 4 the actuator (50) operated the switch in the best point of a cam (44), and cutting actuation was performed -- detecting -- this cutting number of sheets -- counting -- the count of actuation of a switch (51) is counted, it gets wet and the number of discharge of a towel (4) is got to know.

[0053] moreover, cutting number of sheets -- counting -- a switch (51) is used also as a synchro switch which is damp and defines the starting point and the ending point of a manufacture cycle of a towel (4). That is, it gets wet, and manufacture of a towel (4) begins from the condition which shows in drawing 3 and drawing 4 , and is finished with the condition.

[0054] From the starting point of a manufacture cycle, starting of the drive motor (22) of a towel delivery means (18) and starting of the drive motor (49) which drives a cutter (38) are performed by actuation of the start switch (9) of a control panel (8).

[0055] under the present circumstances, a pump (35) is driven to coincidence -- having -- said towel -- the ground -- the towel over which it was built between the grasping means (28) and the towel delivery means (18) -- the water in an auxiliary tank (34A) is injected from the injection nozzle (33) above the ground (15).

[0056] an injection nozzle (33) -- a towel -- it has nozzle opening (33a) of a large number on a par with a longitudinal direction so that the amount of the injected water may become uniform to the cross direction of the ground (15).

[0057] The water of an auxiliary tank (37) is heated by the sheath heater (36) built in the tank, and is maintained at required temperature by temperature control means, such as a thermostat. It is good for the water of the water tank (34) which supplies water to an auxiliary tank (37) to mix a disinfection agent and a germicide at a suitable rate.

[0058] A setup and modification are possible for the rotational frequency of the drive motor (49) which drives the above-mentioned cutter (38), and the drive motor (22) which drives said towel delivery means (18) according to an individual.

[0059] It is decided by the completed difference of a rotational frequency with two drive motors (49) and (22). [get wet and relative / the die length of a towel (4)] for example, the towel of a towel delivery means (18) -- if the rotational frequency of the drive motor (49) of a cutter (38) is made high as compared with the rotational frequency when the rotational frequency of a drive motor (22) is defined so that the delivery rate of the ground (15) may be set constant, one rotation of a disk cam (46) becomes early, it will get wet and the die length of a towel (4) will become short. If the rotational frequency of the drive motor (49) of a cutter (38) is made low, in the reverse, it will get wet and a towel (4) will become long at it.

[0060] A setup of the numeric value of the rotational frequency of these two drive motors (49) and (22) and the die length expected of the digital-readout machine (10) of a control panel (8) when [which it gets wet, the relation of the die length of a towel (4) is called for beforehand, it gets wet, and the die length of a towel (4) takes modification] completed obtains the relative rotational frequency of both drive motors (49) and (22).

[0061] In this case, since it is the parameter which modification of a rotational frequency is not added to the drive motor (49) of a cutter (38), but the drive motor (22) of a towel delivery means (18) is damp, and a towel (4) is not necessarily damp, and adjusts condition, a changed part of the drive motor (22) of a towel delivery means (18) can be amended.

[0062] the digital-readout machine (10) of a control panel (8) -- getting wet -- the manufacture cycle of a towel (4) -- winding -- the count of ***** -- that is, it gets wet and the manufacture number of sheets of a towel (4) can also be set up.

[0063] drawing 8 and drawing 9 -- a towel -- an example of a means which detects the residue of the ground (15) is shown. a roll-like towel -- a winding core penetrates the ground (15) with a mandril (16) like the above-mentioned, and the mandril (16) is stopped by the piece of support (17) which protruded on the inside right-and-left wall surface of a case (2).

[0064] The upward tilt of the receptacle projection (17a) of the front in the piece of support (17) was carried out towards the front, and the back receptacle projection (17b) was prolonged upwards perpendicularly, and the central receptacle projection (17c) is horizontally prolonged so that both may be connected.

[0065] Behind a back receptacle projection (17b), the limit switch (53) which protruded forms the actuator (52) of a free condition in a location higher than the height of a central receptacle projection (17c), and it is *****.

[0066] this limit switch (53) -- a mandril (16) -- a towel -- the ground (15) is wound, and the actuator (52) is an operating state when heavy.

[0067] a towel -- the time of the amount of the ground (15) decreasing -- a towel delivery means (18) -- working -- a towel -- when tension was applied to the ground (15), as for the mandril (16) which became light, the front inclined -- popularity is won, the slant face of a projection (17a) is reached, and it separates from an actuator (52).

[0068] actuation of this limit switch (53) -- detecting -- a towel -- it can detect that the ground (15) decreased.

[0069] drawing 10 -- a roll-like towel -- another support means of the ground (15) is illustrated. the towel which a new roll installed horizontally the depression slot (54) containing a one half grade behind the case (2), and was wound around this depression slot (54) in the shape of a roll -- the ground (15) -- putting in -- that towel -- the weight (55) which consists of an ingredient on which it is easy to slide above the ground (15) is carried.

[0070] The guidance projection (56) is prepared in weight (55) at both sides, and it inserts in the guide rail (57) which prepared the guidance projection (56) in the inside of the both sides of a case (2). If it does in this way, it is not necessary to use the mandril (16) which supports a roll.

[0071]

[Effect of the Invention] This invention can do the following effectiveness so.

(a) a towel -- from the roll material which can hold the ground so much, with easy structure, it gets wet promptly and a towel can be manufactured.

[0072] (b) the towel dried just before use -- since the ground is wet and made -- a towel -- the mothball of the ground is easy and sanitary.

[0073] (c) in the water which wets a towel, mixing of a disinfection agent or a germicide is easy, and since the mixing rate of a disinfection agent or a germicide can be promptly changed easily in order to change the effect of disinfection or sterilization, it gets wet for [which searches for the advanced bactericidal effect in emergency from the **** towel for towels before the usual meal] disinfection, and even the towel of the use range is large -- it gets wet and a towel manufacturing installation can be offered.

[0074] (d) while getting wet for [a lot of / cheaply] towels and being able to offer a towel in the environment where little water must be used efficiently, like [in the aircraft or a train] -- a towel -- since the ground can be kept with the gestalt of a roll-like ingredient, the ** towel manufacturing installation which can be used like the aircraft or a train the the best for the environment where altitude is asked for the goodness of a space utilization factor can be offered.

[0075] (e) Since a user operates and gets wet in each one and can manufacture a towel, automation and full automation are easy.

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] just before this invention gets wet and a user uses especially about the manufacturing installation of a towel -- a towel -- the ground is wet and it considers as the condition that it is suitable for use as it is -- it gets wet and is related with the manufacturing installation of a towel.

[Translation done.]

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PRIOR ART

[Description of the Prior Art] The thing which got wet, soaked the towel etc. in water and extracted it firmly as a towel and which is called a steamed towel is common. Moreover, what heated the wet towel with steam as business use is called a hot towel, and is used in the barbershop etc. Furthermore, as business use, after a vendor soaks the towel made of cloth in a damp or wet condition, he does a seal package with a PURASUTCHIKU film, and some which are supplied to a need person have him.

[0003] In a lot of eating-and-drinking business which gets wet and has the demand of a towel, many things which the paper which can be thrown away was damp, wet the towel with water, and carried out the seal package with the PURASUTCHIKU film are also used.

[0004] On the other hand, it throws away also using the wet paper for makeup, and it gets wet and is used for eradication of the hand in the outdoors etc. for the same purpose as a towel.

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EFFECT OF THE INVENTION

[Effect of the Invention] This invention can do the following effectiveness so.

(a) a towel -- from the roll material which can hold the ground so much, with easy structure, it gets wet promptly and a towel can be manufactured.

[0072] (b) the towel dried just before use -- since the ground is wet and made -- a towel -- the mothball of the ground is easy and sanitary.

[0073] (c) in the water which wets a towel, mixing of a disinfection agent or a germicide is easy, and since the mixing rate of a disinfection agent or a germicide can be promptly changed easily in order to change the effect of disinfection or sterilization, it gets wet for [which searches for the advanced bactericidal effect in emergency from the **** towel for towels before the usual meal] disinfection, and even the towel of the use range is large -- it gets wet and a towel manufacturing installation can be offered.

[0074] (d) while getting wet for [a lot of / cheaply] towels and being able to offer a towel in the environment where little water must be used efficiently, like [in the aircraft or a train] -- a towel -- since the ground can be kept with the gestalt of a roll-like ingredient, the ** towel manufacturing installation which can be used like the aircraft or a train the best for the environment where altitude is asked for the goodness of a space utilization factor can be offered.

[0075] (e) Since a user operates and gets wet in each one and can manufacture a towel, automation and full automation are easy.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In the case of a meal although a hand should be washed and it is clean, it is difficult to wash one's hand with water in a dining-room in the large dining-room which offers meal of a lot of people at once, for example, works and the dining-room in a firm, and the dining-room in a school. Then, although it is desirable to take out a steamed towel separately before a meal, it is not easy to prepare a steamed towel so much.

[0006] For example, the steamed towel generally taken out from a dining-room has added water, in order to make it easy to wipe after sterilizing and disinfecting the towel made with cloth, after use, it repeats sterilization, disinfection, and a humid activity, and a reuse is carried out.

[0007] Since playback of this steamed towel is usually repeatedly performed by the vendor, it is hard to say that it is not necessarily kept clean, and whenever [exhausting] is intense and there are problems, like costs increase.

[0008] even if works, a firm, a school, etc. take a help and time and effort and it requests a vendor in them in order a huge amount is needed and to prepare the steamed towel made of cloth if all users use a steamed towel for every meal, ***** in ** are required. Moreover, as a disposable paper towel, the costs are not cheap.

[0009] Furthermore, in some which considered the steamed towel and the paper towel as the seal package with the PURASUTCHIKU film, there is also a possibility that the PURASUTCHIKU film after use may cause environmental destruction.

[0010] It was made in order to solve the above problems, it gets wet for throwing away, and this invention has equipment of simple structure, manufactures a towel simply and promptly, and aims at enabling it to provide cheaply.

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MEANS

[Means for Solving the Problem] According to this invention, the above-mentioned technical problem is solved as follows.

(1) case the towel which wound around the roll condition and was prepared in the case -- with a towel delivery means to pull out the ground and to send it out out of a case It is alike and sets. a towel -- the water tank in which the water for making the ground become wet is stored, the pump which pressurizes the water of a water tank, and a towel -- the ground is sent out out of a case -- on the way -- the water pressurized with the pump -- a towel -- the towel wet with the water injected from the injection nozzle injected to the ground, and the injection nozzle -- the cutter which cuts the ground to the regular die length is prepared.

[0012] (2) while a towel delivery means is rotated in the above-mentioned (1) term through the drive motor installed in the case, the gear group which slows down and transmits the rotational speed of the drive motor, and its gear group -- a towel -- the driving roller which applies the delivery force to the ground, a driving roller, and a towel -- the ground -- inserting -- confronting each other -- a towel -- it has the auxiliary roller which transmits the turning effort of a driving roller to the ground certainly.

[0013] (3) the towel which was damp in the outlet side of either a driving roller or an auxiliary roller and both in the above (1) or (2) terms -- the shell for not making the ground adhere to a roller is prepared.

[0014] (4) Prepare much irregularity for not making the wet towel sent out from a delivery roller adhere in either of the above-mentioned (1) - (3) terms in the front face of the front panel of the discharge outlet side which passed the driving roller and the auxiliary roller.

[0015] (5) either of the above-mentioned (1) - (4) terms -- setting -- a towel -- the ground is paper towels.

[0016] (6) either of the above-mentioned (1) - (5) terms -- setting -- a towel -- either the disinfection agent or the germicide is mixed in the water which wets the ground.

[0017] (7) In either of the above-mentioned (1) - (6) terms, while a water tank is divided into a big water tank and a small water tank, the small water tank contains the heating heater.

[0018] (8) either of the above-mentioned (1) - (7) terms -- setting -- an injection nozzle -- a roll-like towel -- between the ground and towel delivery means -- one pair of ranging behavior rollers -- having -- a towel -- the towel which faced across the ground -- the ground -- a grasping means -- preparing -- the towel -- the ground -- prepare an injection nozzle between a grasping means and a towel delivery means.

[0019] (9) The stationary knife by which the cutter was fixed to the front section within a case in either of the above-mentioned (1) - (8) terms, The migration cutting edge which fixed to the slide plate by which ** arrival was carried out so that cutting parts might counter the stationary knife and vertical migration might be possible for the front section within a case, It is installed so that it can rotate in a case, and it consists of a disk cam which moves a slide plate perpendicularly in rotation, and a drive motor which carries out the rotation drive of the disk cam.

[0020]

[Embodiment of the Invention] Drawing 1 - drawing 9 show 1 operation gestalt of this invention. In addition, the right end of drawing 1 is a front face.

[0021] It is the perspective view concerning this invention which got wet and looked at the towel manufacturing installation from the method of the forward right, and drawing 1 gets wet, and it circles to the circumference of the vertical axes (illustration abbreviation) prepared in the left, and it has established the front panel (3) which can be opened and closed in the front face of the case (2) in a towel manufacturing installation (1) which carries out front opening. It gets wet in the front face of the front panel (3), and the saucer (6) on which structure length gets wet in the lower part, and the exhaust port (5) of a towel (4) puts a towel (4) into it is prepared in it.

[0022] The lock release button (7) of which the **** is canceled is prepared in the left lateral of the front panel (3), and the control panel (8) for getting wet and operating a towel manufacturing installation (1) is prepared in the top face of the front panel (3).

[0023] The start button (9) which it gets [start button] wet and makes manufacture of a towel (4) start, and two or

more actuation switches (11) for getting wet and performing the manufacture number of sheets of a towel (4), the digital-readout machine (10) for getting wet and setting up the die length of a towel (4), and a setup of die length are formed in the control panel (8).

[0024] Many protruding lines (13) of the vertical direction for preventing that just made [which it lets out to the perpendicular wall surface (12) in the front panel (3) which gets wet and can set the exhaust port (5) of a towel (4) caudad from an exhaust port (5)] gets wet, and a towel (4) sticks are prepared, and the concave convex (14) on a par with a longitudinal direction is formed.

[0025] the towel of the shape of a roll which gets wet behind the front panel (3) in the inside of a case (2), and serves as an ingredient of a towel (4) behind -- the ground (15) is established as shown in drawing 8 , drawing 9 , or drawing 10 .

[0026] the towel which will be used for this invention if it explains to a detail based on drawing 8 and drawing 9 -- it is thick a little and the ground (15) is wound in the shape of a roll in the condition which porous water nature consisted of high paper, and dried of usually being called the paper towel.

[0027] a roll-like towel -- the ground (15) is wound around a mandril (16), and is supported, and the mandril (16) is supported by the right-and-left wall surface of a case (2) pivotable at the piece of support (17) by which the turning-inward protrusion was carried out.

[0028] a towel -- the tip of the ground (15) is pulled out to the front and introduced into the towel delivery means (18) in the front panel (3) which got wet and was established behind the exhaust port (5) of a towel (4).

[0029] Drawing 2 is the perspective view showing the rear face of the front panel (3).

[0030] As shown in drawing 2 , the towel delivery means (18) equips the perpendicular fulcrum (19) of the right and left prepared in the front end section inside of a case (2), and (19) with the top tread roller (20) with which both ends were supported pivotably, and the lower roller (21).

[0031] It sets caudad, and a lower roller (21) is connected with the drive motor (22) attached in the right-hand side perpendicular fulcrum (19) through the interlocking gear group for moderation (23), and serves as a driving roller.

[0032] A top tread roller (20) fixes two or more rubber rollers (25) of the diameter of said to the pivot (24) supported pivotably by the perpendicular fulcrum (19) of said right and left, and (19), and is formed in it.

[0033] A lower roller (21) fixes the rubber roller (27) which is a upside rubber roller (25) and a upside equal diameter, and was divided into the pivot (26) supported pivotably by the perpendicular fulcrum (19) of said right and left, and (19) more finely than it, and is formed.

[0034] An up-and-down rubber roller (25) and (27) have moderate elastic force, and the pressure welding is mutually carried out.

[0035] between the rubber roller (25) of these upper and lower sides, and (27) -- the towel of the shape of said roll -- the point of the ground (15) should be caught -- the point is inserted in the discharge hole (5) prepared in the front panel (3).

[0036] It is desirable to consist one of an up-and-down rubber roller (25) and (27) of an elastic ingredient from another side. since the lower roller (21) is a driving roller in this example -- that rubber roller (27) -- a upside rubber roller (25) -- as elasticity -- a towel -- it is made to have increased the touch area with the ground (15)

[0037] a upside rubber roller (25) -- a lower rubber roller (27) -- a towel -- the towel inserted into both rubber rollers (25) and (27) since it was rotated by a pivot (24) and one, although it was the follower roller which forces the ground (15) -- to the ground (15), it will work also as a driving roller.

[0038] Behind the towel delivery means (18) which consists of a top tread roller (20) and a lower roller (21) the towel pulled out from the roll, while guiding the ground (15) between a top tread roller (20) and a lower roller (21) a towel -- it does not slacken between divisions with the ground (15) -- as -- a towel -- while applying a back tension to the delivery force of the ground (15) -- a towel -- the towel which grasps the ground (15) -- the ground -- the grasping means (28) is established.

[0039] a towel -- the ground -- a grasping means (28) consists of a free rotation roller (29a) (29b) of one pair of upper and lower sides supported pivotably for both ends between a perpendicular fulcrum (19) on either side and (19), enabling free rotation, and the migration of an upper roller (29a) in the vertical direction is attained through the longwise bearing hole (30) prepared both the perpendicular fulcrum (19) and (19).

[0040] a towel -- the ground (15) passes through between both free rotation rollers (29a) (29b), and is led to between the top tread rollers (20) and lower rollers (21) of a towel delivery means (18). namely, a towel -- the ground (15) -- a towel -- the ground -- it is built between a grasping means (28) and a towel delivery means (18).

[0041] both the free rotation roller (29) and (30) -- the thing of the metal shape of a long and slender rod -- it is -- the self-weight of an upper roller (29) -- a towel -- it has faced across the ground (15).

[0042] the towel which has sandwiched these free rotation roller (29a) (29b) according to the inertia operation by the weight -- the depressant action which presses down a rapid rate change of the ground (15) occurs.

[0043] the towel which comes out of an up-and-down roller (20) and (21) ahead [of a towel delivery means (18)] as

shown in drawing 4 -- the ground (15) adheres to the rubber roller (25) of a top tread roller (20), and many shells (31) for preventing having been wound are prepared.

[0044] A shell (31) consists of a long and slender elastic piece of-like [strip-of-paper], and have consistency into the part of the gap of the adjoining thing in the rubber roller (25) of the upper part divided into plurality, and it is arranged. The lower limit of each shell (31) was inserted between adjoining rubber rollers (25), and the upper limit has fixed to the upper limit of the anterior part frame (32) which connects the front end of a perpendicular fulcrum (19) on either side and (19).

[0045] a towel -- the ground -- the towel over which it was built between the grasping means (28) and the towel delivery means (18) -- the injection nozzle (33) of the shape of a pipe with a longitudinal direction almost long and slender above the center of the longitudinal direction of the ground (15) is built over and prepared in a perpendicular fulcrum (19) and (19). The output hose (36) of the pump (35) which pressurizes the water of the water tank (34) which established the right end of an injection nozzle (33) in the posterior part of a case (2) is connected (refer to drawing 2). [0046] Between the water tank (34) and the pump (35), the water supplied through a hose (34a) from a water tank (34) is divided a little, and is once stored, and is warmed, and the auxiliary tank (34A) having the heater (37) for sending to a pump (35) is prepared.

[0047] the towel which it let out to the anterior part frame (32) from the discharge hole (5) with the towel delivery means (18) between the towel delivery means (18) and the discharge hole (5) as shown in drawing 3 and drawing 4 -- the cutter (38) which cuts the ground (15) by the regular die length is prepared.

[0048] The stationary knife which the cutter (38) fixed on the anterior part frame (32) [above a discharge hole (5)] (39), The slide plate which enabled it to move up and down along with the guide plate (40) prepared near the center of an anterior part frame (32), and (41) (42), The migration cutting edge long to a longitudinal direction which fixed to the upper limit of a slide plate (42) (43), Per [which protruded on the lower limit section near the upper limit of a slide plate (42) towards back, respectively] one pair of cams (42a) (42b) The disk cam pivoted by the backward pivot (45) which was made to contact a cam (44), connected with the slide plate (42), and fixed on the anterior part frame (32) (46), The drive motor which drives a disk cam (46) through the reduction gear group (48) coordinated with the gear (47) prepared in the peripheral surface of a disk cam (46) (49), the cutting number of sheets to which the actuator (50) protrudes on the migration locus of the cam (44) of a disk cam (46) -- counting -- it has the switch (51).

[0049] In addition, the longwise hole (42c) which may **** a pivot (45) is prepared in the center section of the slide plate (42).

[0050] Drawing 7 is the perspective view which looked at the above-mentioned disk cam (46) from the transverse plane. A cam (44) When cutting the ground (15), per upper cam (42a) is contacted. a migration cutting edge (43) is gone up -- making -- a towel -- After cutting the ground (15), per downward cam (42b) is contacted. smooth -- and -- prompt -- a migration cutting edge (43) -- a stationary knife (39) -- **** doubling and a towel -- the following towel -- it has the main cam side (44a) which misses a migration cutting edge (43) promptly to delivery at the tip of the ground (15), and the sub cam side (44b) supported auxiliary when the main cam side (44a) changes per cam of one pair of upper and lower sides (42a) (42b).

[0051] Drawing 3 and drawing 4 show the condition that the migration cutting edge (43) was maximum-dropped, by the disk cam (46), and drawing 5 and drawing 6 show the condition that the migration cutting edge (43) was maximum-raised, by the disk cam (46).

[0052] cutting number of sheets -- counting -- a switch (51), when a disk cam (46) maximum-drops a migration cutting edge (43), as shown in drawing 3 and drawing 4 the actuator (50) operated the switch in the best point of a cam (44), and cutting actuation was performed -- detecting -- this cutting number of sheets -- counting -- the count of actuation of a switch (51) is counted, it gets wet and the number of discharge of a towel (4) is got to know.

[0053] moreover, cutting number of sheets -- counting -- a switch (51) is used also as a synchro switch which is damp and defines the starting point and the ending point of a manufacture cycle of a towel (4). That is, it gets wet, and manufacture of a towel (4) begins from the condition which shows in drawing 3 and drawing 4 , and is finished with the condition.

[0054] From the starting point of a manufacture cycle, starting of the drive motor (22) of a towel delivery means (18) and starting of the drive motor (49) which drives a cutter (38) are performed by actuation of the start switch (9) of a control panel (8).

[0055] under the present circumstances, a pump (35) is driven to coincidence -- having -- said towel -- the ground -- the towel over which it was built between the grasping means (28) and the towel delivery means (18) -- the water in an auxiliary tank (34A) is injected from the injection nozzle (33) above the ground (15).

[0056] an injection nozzle (33) -- a towel -- it has nozzle opening (33a) of a large number on a par with a longitudinal direction so that the amount of the injected water may become uniform to the cross direction of the ground (15).

[0057] The water of an auxiliary tank (37) is heated by the sheath heater (36) built in the tank, and is maintained at required temperature by temperature control means, such as a thermostat. It is good for the water of the water tank (34)

which supplies water to an auxiliary tank (37) to mix a disinfection agent and a germicide at a suitable rate.

[0058] A setup and modification are possible for the rotational frequency of the drive motor (49) which drives the above-mentioned cutter (38), and the drive motor (22) which drives said towel delivery means (18) according to an individual.

[0059] It is decided by the completed difference of a rotational frequency with two drive motors (49) and (22). [get wet and relative / the die length of a towel (4)] for example, the towel of a towel delivery means (18) -- if the rotational frequency of the drive motor (49) of a cutter (38) is made high as compared with the rotational frequency when the rotational frequency of a drive motor (22) is defined so that the delivery rate of the ground (15) may be set constant, one rotation of a disk cam (46) becomes early, it will get wet and the die length of a towel (4) will become short. If the rotational frequency of the drive motor (49) of a cutter (38) is made low, in the reverse, it will get wet and a towel (4) will become long at it.

[0060] A setup of the numeric value of the rotational frequency of these two drive motors (49) and (22) and the die length expected of the digital-readout machine (10) of a control panel (8) when [which it gets wet, the relation of the die length of a towel (4) is called for beforehand, it gets wet, and the die length of a towel (4) takes modification] completed obtains the relative rotational frequency of both drive motors (49) and (22).

[0061] In this case, since it is the parameter which modification of a rotational frequency is not added to the drive motor (49) of a cutter (38), but the drive motor (22) of a towel delivery means (18) is damp, and a towel (4) is not necessarily damp, and adjusts condition, a changed part of the drive motor (22) of a towel delivery means (18) can be amended.

[0062] the digital-readout machine (10) of a control panel (8) -- getting wet -- the manufacture cycle of a towel (4) -- winding -- the count of ***** -- that is, it gets wet and the manufacture number of sheets of a towel (4) can also be set up.

[0063] drawing 8 and drawing 9 -- a towel -- an example of a means which detects the residue of the ground (15) is shown. a roll-like towel -- a winding core penetrates the ground (15) with a mandril (16) like the above-mentioned, and the mandril (16) is stopped by the piece of support (17) which protruded on the inside right-and-left wall surface of a case (2).

[0064] The upward tilt of the receptacle projection (17a) of the front in the piece of support (17) was carried out towards the front, and the back receptacle projection (17b) was prolonged upwards perpendicularly, and the central receptacle projection (17c) is horizontally prolonged so that both may be connected.

[0065] Behind a back receptacle projection (17b), the limit switch (53) which protruded forms the actuator (52) of a free condition in a location higher than the height of a central receptacle projection (17c), and it is *****.

[0066] this limit switch (53) -- a mandril (16) -- a towel -- the ground (15) is wound, and the actuator (52) is an operating state when heavy.

[0067] a towel -- the time of the amount of the ground (15) decreasing -- a towel delivery means (18) -- working -- a towel -- when tension was applied to the ground (15), as for the mandril (16) which became light, the front inclined -- popularity is won, the slant face of a projection (17a) is reached, and it separates from an actuator (52).

[0068] actuation of this limit switch (53) -- detecting -- a towel -- it can detect that the ground (15) decreased.

[0069] drawing 10 -- a roll-like towel -- another support means of the ground (15) is illustrated. the towel which a new roll installed horizontally the depression slot (54) containing a one half grade behind the case (2), and was wound around this depression slot (54) in the shape of a roll -- the ground (15) -- putting in -- that towel -- the weight (55) which consists of an ingredient on which it is easy to slide above the ground (15) is carried.

[0070] The guidance projection (56) is prepared in weight (55) at both sides, and it inserts in the guide rail (57) which prepared the guidance projection (56) in the inside of the both sides of a case (2). If it does in this way, it is not necessary to use the mandril (16) which supports a roll.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the perspective view by this invention which got wet and looked at the towel manufacturing installation from the front.

[Drawing 2] It is the perspective view which is shown in drawing 1 and in which getting wet, removing a case and the front panel and showing the back flank of the front panel of a towel manufacturing installation.

[Drawing 3] It is III-III line view drawing of longitudinal section shown in drawing 2.

[Drawing 4] It is the IV-IV line view Fig. shown in drawing 3.

[Drawing 5] It is the same drawing of longitudinal section as drawing 3 when a cutter changes into a cutting condition.

[Drawing 6] It is a VI-VI line view Fig. in drawing 5 when a cutter changes into a cutting condition.

[Drawing 7] It is the perspective view which looked at the disk cam from the transverse plane.

[Drawing 8] a roll-like towel -- it is the enlarged vertical longitudinal sectional view showing the condition of having attached the ground in the case.

[Drawing 9] a roll-like towel -- it is the same enlarged vertical longitudinal sectional view as drawing 8 in the condition that the ground decreased.

[Drawing 10] a roll-like towel -- the roll-like towel in another example which supports the ground in a case -- it is the enlarged vertical longitudinal sectional view of the ground.

[Description of Notations]

(1) Get wet and it is a towel manufacturing installation.

(2) Case

(3) Front panel

(4) Get wet and it is a towel.

(5) Exhaust port

(6) Saucer

(7) Lock release button

(8) Control panel

(9) Start button

(10) Digital-readout machine

(11) Actuation switch

(12) Perpendicular wall surface

(13) Protruding line

(14) Concave convex

(15) a towel -- the ground

(16) Mandril

(17) The piece of support

(17a) - (17c) -- a receptacle projection

(18) Towel delivery means

(19) Perpendicular fulcrum

(20) Top tread roller

(21) Lower roller

(22) Drive motor

(23) Interlocking gear group

(24) Pivot

(25) Rubber roller

(26) Pivot

(27) Rubber roller

- (28) a towel -- the ground -- a grasping means
- (29a) Free rotation roller (29b)
- (30) Bearing hole
- (31) Shell
- (32) Anterior part frame
- (33) Injection nozzle
- (34) The increase of storage of water
- (35) Pump
- (36) Output hose
- (37) Heater
- (38) Cutter
- (39) Stationary knife
- (40) (41) guide plates
- (42) Slide plate
- (42a) Per cam (42b)
- (42c) Longwise hole
- (43) Migration cutting edge
- (44) Cam
- (44a) The main cam side
- (44b) Sub cam side
- (45) Pivot
- (46) Disk cam
- (47) Gear
- (48) Reduction gear group
- (49) Drive motor
- (50) Actuator
- (51) cutting number of sheets -- counting -- a switch
- (52) Actuator
- (53) Limit switch
- (54) Depression slot
- (55) Weight
- (56) Guidance projection
- (57) Guide rail

[Translation done.]

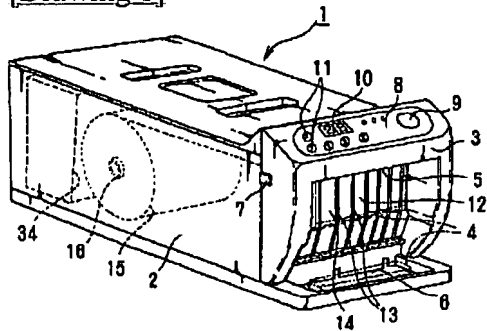
NOTICES

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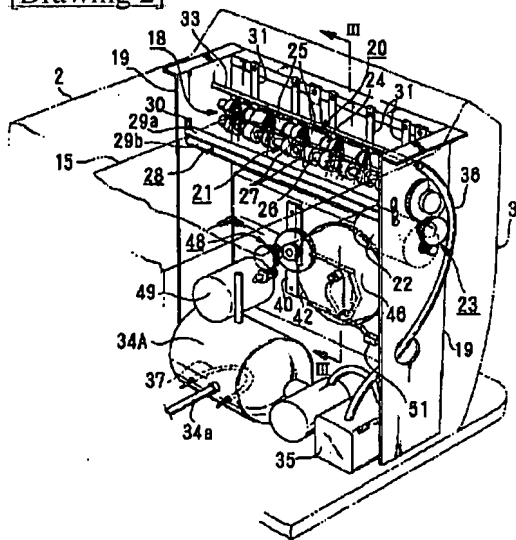
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DRAWINGS

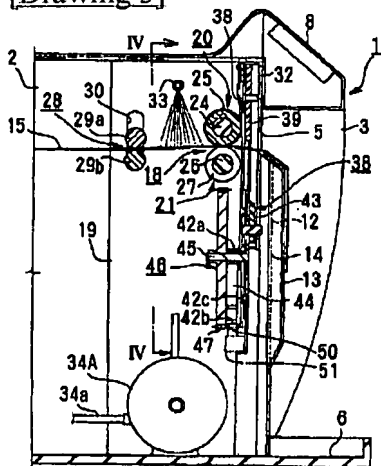
[Drawing 1]



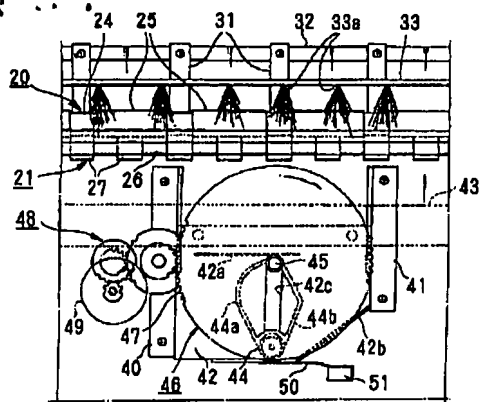
[Drawing 2]



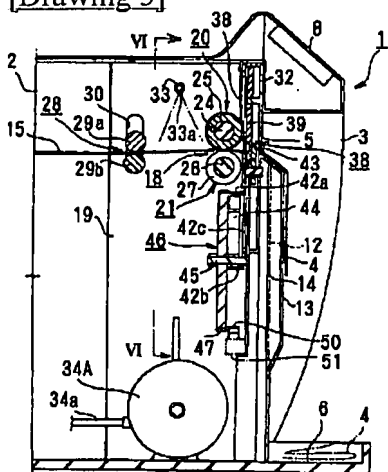
[Drawing 3]



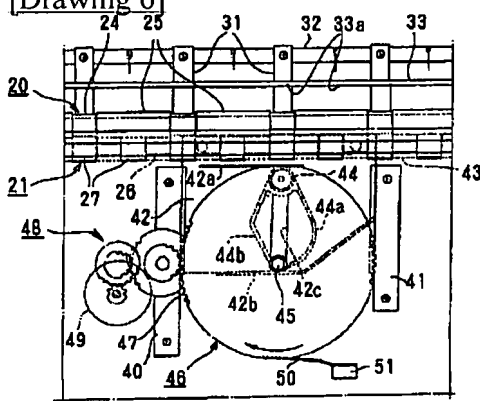
[Drawing 4]



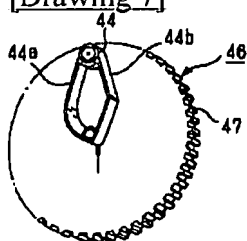
[Drawing 5]



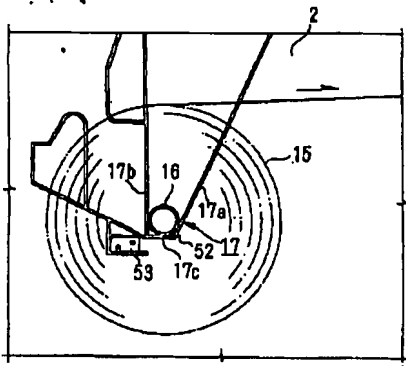
[Drawing 6]



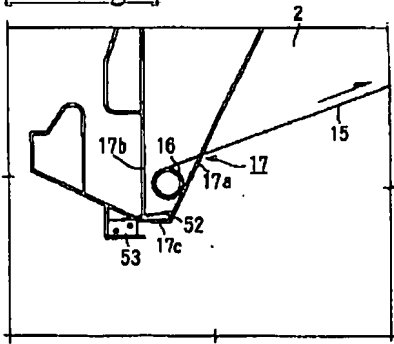
[Drawing 7]



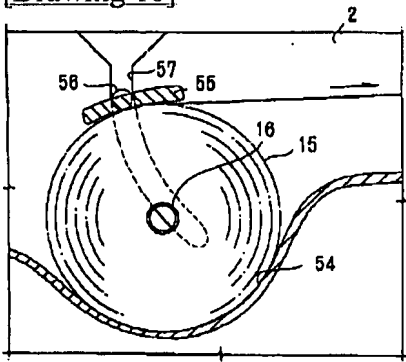
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Translation done.]